

## Unit of Study Outline

### **ELEC5513 Network Management and Queuing Theory Semester 2, July 2007**

**Instructor:** [Dr Abbas Jamalipour](#), Room 732, Bldg. J03, Email: abbas at ee dot usyd dot edu dot au

**Tutor:** [Mr. Kumudu S. Munasinghe](#), Room 730, Email: kumudu at ee dot usyd dot edu dot au

#### **Classes:**

Lectures: Wednesdays 11am – 1 pm, Lecture Theatre 450, Bldg. J03 (EEB)

Tutorials: Wednesdays 2 pm – 4 pm, Lecture Theatre 450, Bldg. J03 (EEB)

#### **Supporting Web Page for updated announcements:**

<http://www.ee.usyd.edu.au/~abbas/courses/E5513/>

#### **Text and Course Materials:**

Main Text: Mani Subramanian, "Network Management: Principles and Practice," Addison-Wesley, 2000

Lecture Notes are available [here](#).

Tutorial Questions are available [here](#).

Assignments are available [here](#).

#### **Other References:**

G. Bolch, S. Greiner, H. de Meer, K. S. Trivedi, "Queuing Networks and Markov Chains," Wiley-InterScience, 2006

William Stallings, "SNMP, SNMPv2, SNMPv3, and RMON 1 and 2," 3rd Ed., Addison-Wesley, 1999

#### **Assumed Knowledge:**

Basically, students need to know the concepts of data communications and mobile communications. More precisely: ELEC3506 Data Communications and the Internet (or ELEC3504 Data Communications and the Internet) and ELEC3505 Communications (or ELEC3503 Introduction to Digital Communications).

#### **UoS Aims and Objectives:**

This unit presents the fundamental knowledge and skills in the design, planning and management of telecommunications networks. Upon successful completion, students will be able to understand the legal and social framework of network management; understand and appreciate key aspects of network design, planning and management; understand and apply techniques to solve real problems in network design, implementation and management.

Topic areas include: data communications and network management overview; review of computer network technology (LAN and WAN); simple network management protocol (SNMP); remote network monitoring (RMON); broadband network management; introduction to queuing theory and its application in network planning and design.

#### **Learning Outcomes:**

At the end of semester, students will be able to critically examine the network operability and how to design a computer network efficiently.

#### **Graduate Attributes:**

Through lectures, tutorials, and assignments students will become able to:

1. Develop knowledge in advanced and modern computer networks and their management
2. Apply this knowledge to real situations and understand the merits and limitations of specific network design
3. Have the ability to use appropriate technology to design a computer network addressing specific needs

4. Develop and present their ideas to others

**Teaching and Learning Approach:**

The unit consists of lectures which provide theoretical background for network management and queuing theory and, tutorials which provide the opportunity for students to get more specific knowledge on a particular technology with numerical examples and practical questions. The students will be asked also to submit assignment reports during the semester and be prepared for mid-semester and final exams.

**Workload requirements:**

1. *Contact Hours*: 2 hours lecture and one 2-hour tutorial per week
2. Students are expected to spend at least 4 hours/wk besides tutorials and lectures for preparation on lecture/tutorial as well as report for the assignments
3. It is strongly recommend to attend all Lectures and Tutorial sessions. The discussions happen during lectures and tutorials will have much more learning materials than those included in your lecture notes and textbooks.
4. While there is no requirement for submitting reports for tutorial questions, it is strongly recommended to work on tutorial questions in advance, prepare a report for yourself and then compare your answers with those provided by the tutor on the day. Attending tutorial sessions without preparation would be of no use in your learning process.
5. The best way to learn this subject is to be active and interact during lectures and tutorials. So please be prepared before coming to the class!

**Consultation Times:**

Your Instructor and Tutor will be available at all times to answer your enquiries, particular question on the topics, your comment and feedback on how to improve any component of the unit. You can come directly to our office or send us an email. *Your comments will be seriously considered and your constructive feedback to improve the learning and teaching is greatly appreciated.*

The following period is particularly reserved for consultation with the instructor regarding this unit:

- Wednesdays 1 pm – 4 pm

**Student Feedback:**

We would like to improve the teaching and learning methods of this unit as early as there is any shortcoming. So please help us by providing comments and suggestions at any time, by email or in person. Don't wait for the student evaluation questionnaire at the end of semester.

**Assessments and Examinations:**

1. Tutorial attendance: 5% (It is necessary to attend tutorial sessions. The answers for tutorial question will not be given outside the tutorial sessions. Attendance of at least 10 sessions of tutorial is necessary in order to get the 5% mark.)
2. Report on assignments: 20% consists of Assignment 1 (10%), Assignment 2 (10%)
3. Mid-semester exam: 20% (**Date/Time: Wednesday 12 September 2007, During Lectures in the morning**)
4. Final exam: 55%

**Syllabus (subject to change/modification):**

Network Management Overview  
Local Area Networks  
IP Networks  
Network Management: Standards, Models and Language  
SNMP Network Management  
SNMP v1, v2 and v3  
RMON  
Queuing Analysis - Fundamentals

**Schedule for Semester 2, 2007:**

Date	Week	Lecture	Tutorial	Assignment/Exam
25/7/07	1	1	1	
1/8/07	2	2	2	
8/8/07	3	3	3	
15/8/07	4	4	4	
22/8/07	5	5	5	
29/8/07	6	6	6	Assignment 1: released
5/9/07	7	7	7	
12/9/07	8	8	8	Mid-sem Exam Assignment 1: submitted
19/9/07	9	9	9	
3/10/07	10	10	10	
10/10/07	11	11	11	Assignment 2: released
17/10/07	12	12	12	
24/10/07	13	13	review questions	Assignment 2: submitted